

COSSARO Candidate Species at Risk Evaluation
for
Yellow-breasted Chat (*Icteria virens*)

Committee on the Status of Species at Risk in Ontario (COSSARO)

Assessed by COSSARO as ENDANGERED

November 2011

FINAL

La **Paruline polyglotte** (*Icteria virens*) est un spécialiste des arbustes et des fourrés qui se trouve à l'extrême nord de son aire de répartition au Canada. Une sous-espèce (*I. v. virens*) n'est présente que dans le sud de l'Ontario et constitue une population localisée et de très petite taille. Depuis le dernier rapport de situation en 2000, des baisses marquées se sont produites dans la population en Ontario, en raison de la perte et de la fragmentation de l'habitat. Il semble également s'être produit une contraction de l'aire de répartition. Les principales menaces comprennent la perte d'habitat résultant de la succession forestière, les pertes d'habitat attribuables à l'homme du fait de l'intensification de l'agriculture et de l'expansion urbaine, la fragmentation de l'habitat et la réduction de population subséquente, et le parasitisme par le vacher à tête brune. Le potentiel d'effet de sauvetage du voisinage a aussi diminué de façon radicale durant cette période, parce que la baisse de population est apparente dans presque tout l'est de l'aire de répartition de l'espèce. La population de l'espèce en Ontario est de toute évidence très faible, en baisse et en danger de disparition. Une désignation d'espèce **en voie de disparition** est donc appropriée pour la Paruline polyglotte en Ontario.

Cette publication hautement spécialisée, COSSARO Evaluation for Yellow-breasted Chat n'est disponible qu'en anglais en vertu du Règlement 671/92 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez contacter le secrétariat de COSSARO par courrier électronique à l'adresse COSSAROsecretariat@ontario.ca.

PART 1 Current status and distribution

Current designations:

GRANK – *Icteria virens* - G5 G-5; *I. v. virens* G5TNR (not yet ranked) (last reviewed) (03 Dec 1996; NatureServe 2011)

NRANK Canada – *Icteria virens* - N4B; *I. v. virens* - NNRB (last reviewed 13 Feb 2001) (NatureServe 2011)

COSEWIC – Special Concern, last examined November 2000 (COSEWIC, 2011)

SARA – Special Concern (Schedule 1) (Environment Canada, 2011)

ESA 2007 – Special Concern (Ontario Ministry of Natural Resources, 2011)

SRANK – S2B (NHIC/NatureServe 2011)

Distribution in Ontario:

The distribution of Yellow-breasted Chat in Ontario has always been limited to the Carolinian region of south-western Ontario. This bird occurs south of Toronto as far as Pelee Island (Eagles 2007). During the first Ontario breeding bird atlas (1981-1985) it was found north of the Carolinian region in only Goderich, Kingston and Sherburne areas (Eagles 1987). The second breeding bird atlas (2001-2005) revealed a major range reduction; only two records exist outside the Carolinian region: near Goderich and Pickering (Eagles 2007).

Distribution and status outside Ontario:

Yellow-breasted Chat has a disjunct North American range, with the *auricollis* subspecies in the west and the *virens* subspecies in eastern North America (Eckerlee et al. 2001). Its range extends from the eastern Great Plains and central Texas eastward. In Canada, it is restricted to Ontario, where there is a very small population, primarily restricted to the extreme southwest portion of the province. The species breeds from southern British Columbia across southern Canada and the northern U.S. to northern New England, south to southern Baja California and Nayarit in the west, Morelos in central Mexico, and Gulf Coast from southern Tamaulipas to northern Florida. In Canada, Yellow-breasted Chat breeds in southern British Columbia, southern Alberta and southern Saskatchewan (*I. v. auricollis*) (Cannings 2000) and in southern Ontario (*I. v. virens*). Elsewhere in Canada (southern Manitoba, northern Ontario, southern Quebec, and the Maritimes) the Yellow-breasted Chat occurs only as a vagrant. Winters in southern Baja California, Sinaloa, southern Texas, and southern Florida southward (rarely north to southwestern U.S. and New England), more commonly in lowlands than at higher elevations; on Yucatan Peninsula and south through Central America rarely as far as western Panama. Accidental in Bahamas and Cuba (Nature Serve 2011).

PART 2 Eligibility for Ontario status assessment

2.1 Application of eligibility criteria

Taxonomic distinctness

Yes. There are two subspecies of Yellow-breasted Chat: the western subspecies (*I. v. auricollis*) has a slightly longer tail, and there are some colour differences with the eastern subspecies (*I. v. virens*) (Sibley 2000). In addition to their taxonomic discreteness, there is a natural disjunction between these populations because of the large geographic distance between them. They are also genetically distinct (Lovette et al. 2004).

Designatable units

At the highest (subspecies) level, the first division between populations of Yellow-breasted Chat in Canada is between the western *I. v. auricollis* and eastern *I. v. virens* subspecies. All individuals in the Ontario population of Yellow-breasted Chat belong to the eastern subspecies (*I. v. virens*), which is one of three designatable units of this species in Canada (COSEWIC 2011).

Native status

Yes. The first Ontario record was made at Point Pelee in 1879 (COSSARO 2000). The breeding range of the Yellow-breasted Chat in eastern North America may have expanded in the late 19th and early 20th centuries due to anthropogenic habitat change (Eagles 2007).

Presence/absence

Present.

2.2 Eligibility results

1. The putative taxon or DU is valid. Yes
2. The taxon or DU is native to Ontario. Yes
3. The taxon or DU is present in Ontario, extirpated from Ontario or extinct? Present

PART 3 Ontario status based on COSSARO evaluation criteria

3.1 Application of primary criteria (rarity and declines)

1. Global Rank

Not in any category. *Icteria virens* - G-5; *I. v. virens* G5TNR (not yet ranked) (NatureServe 2011).

2. Global Decline

THREATENED. NatureServe (2011) indicated a stable short-term trend (i.e. 10% change) for the species, but did not identify trends for *I. v. virens*. The *I. v. virens* subspecies is showing long-term significant declines in all states adjacent to Ontario. It has declined by between 26-81% since 1966 in all seven Bird Conservation Regions (BCR) where it occurs in northeastern North America (Table 1); for all but one BCR, decline rates exceeded 30%, and four were more than 50%. Short-term (10 year) trends have been declining by 5-42%, except in Central Hardwoods where trends have been stable. This species has been declining in all 18 northeastern states where it occurs (including Ontario), with long-term (43 years) declines ranging from 43-99% and short-term (10 years) ranging from 3-87%. All long-term trends have exceeded 30%; all but four have been greater than 50% (Appendix 1). The short-term decline rates for five states have exceeded 30%.

Table 1. Yellow-breasted chat population trends in 7 Bird Conservation Regions where present in Northeastern North America as calculated from Breeding Bird Survey routes (Sauer et al. 2011).

Bird conservation region (number of routes)	1966-2009 annual trend (%; 95% CI)	43 year trend (%)	1999-2009 annual trend (%; 95% CI)	10 year trend (%)
Lower Great Lakes (n=41)	-3.5 (-5.7, -1.2)	-78.4%	-2.5 (-6.5, 1.8)	-22.4%
Prairie Hardwood Transition (n=36)	-3.8 (-6.9, -0.9)	-81.1%	-5.3 (-18.4, 0.8)	-42%
Eastern Tallgrass Prairie (n=178)	-0.9 (-1.7, 0.0)	-32.3%	0.5 (-1.6, 2.5)	-4.9%
New England/mid-Atlantic Coast (n=74)	-2.3 (-3.5, -1.7)	-63.2%	-1.9 (-4.3, 0.4)	-17.5%
Piedmont (n=130)	-0.7 (-1.3, -0.2)	-26.1%	-1.1 (-2.4, 0.0)	-10.5%
Appalachian Mountains (n=292)	-3.1 (-3.6, -2.6)	-74.2%	-3.4 (-4.6, -2.2)	-29.2%
Central Hardwoods (n=134)	-1.5 (-1.9, -1.1)	-47.8%	0.1 (-0.9, 1.0)	1%

3. Northeastern North America ranks

SPECIAL CONCERN. Yellow-breasted Chats are classified as S2 or S1 in five of 18 states/provinces (28%), including Ontario (Appendix 1).

4. Northeastern North America decline

Not applicable. The northeastern North American distribution of the *virens* subspecies of Yellow-breasted Chat is almost equivalent to its global range.

5. Ontario occurrences

THREATENED. 7 extant EOs in Ontario, with only four of these (two on Pelee Island and two within Point Pelee National Park) considered to be annual, core breeding populations. Most other EOs are thought to represent sporadic breeding events. Note that the EO entry is considered incomplete by Ontario Natural Heritage Information Centre (M. Oldham, pers. comm.). Yellow-breasted Chat was documented in 27 100-km² squares during the second breeding bird atlas (2001-2005; Eagles 2007). During the first Ontario Breeding Bird Atlas (1981-1985), the population was estimated at 50 pairs (Eagles 1987). Based on data from the second Ontario Breeding Bird Atlas and element occurrence data from the Natural Heritage Information Centre, Eagles (2007) estimated a population of 42- 50 pairs. COSEWIC (2011) considered this to be an over-estimate because it did not factor in the likelihood that many of the occurrences in the database represented one-time only transitory events (at least some of which also likely did not consist of bona fide breeding pairs), and it also did not account for the 55% percentage decline of squares occupied from the first to second atlas periods. COSEWIC (2011) also alludes to post-atlas (post-2005) declines that have occurred at two key sites in Ontario. As such, while it is difficult to estimate an accurate population size for Ontario, the current population is likely lower than Eagles' (2007) minimum estimate of 42 pairs (84 mature individuals) (COSEWIC 2011).

6. Ontario decline

THREATENED. Comparisons between the two Ontario breeding bird atlas periods suggested a 20-year decline both in the number of occupied 10 km squares and a major range retraction (Eagles 2007). Forty-five squares had evidence of breeding during the first atlas, whereas only 27 squares in the second atlas were occupied. After adjusting for differences in survey effort, an overall decline of 55% over 20 years was calculated for Ontario though the results were not statistically significant. This translates into a 10-year decline rate of 33% (COSEWIC 2011). The decline in probability of observation was greater in the Simcoe-Rideau region (-86%; $p < 0.1$) than in the Carolinian region (-45%; $p < 0.1$), which may indicate a possible range retraction southwards (Eagles 2007). Because there is close to a 1:1 relationship between atlas square occupancy and abundance for rare species like the Yellow-breasted Chat, the 33% decline in occupancy over 10 years is regarded as a reasonable estimate of population change for Ontario (P. Blancher pers. comm. 2011).

Almost 40% of the Ontario breeding population previously occurred regularly in just two areas of the province: Point Pelee National Park and Pelee Island, both of which receive a high degree of attention amongst birders and researchers; in 2009 it appears that only one pair nested in each location in 2010 (Environment Canada 2011). Analysis of standardized FBMP point count surveys (n=22 sample points) conducted at Point Pelee National Park estimated a 21% average annual decline in chat abundance between 1995-2008 (Lepage et al. 2009). All the available evidence suggests that chats in Ontario have been seriously declining over the past decade in particular, both in terms of numbers and occupancy. There are now probably fewer than 10 locations that the species occurs in as a breeding species in any one year.

7. Ontario's conservation responsibility

Not in any category. The global population (mostly in the U.S.) was approximately 10 million birds (Rocky Mountain Bird Observatory 2009), so the Ontario population makes up 0.001% of the population. Ontario comprises less than 1% of the global breeding range.

3.2 Application of secondary criteria (threats and vulnerability)

8. Population sustainability

Not in any category. No information, although the species is clearly in decline in Ontario

9. Lack of regulatory protection for exploited wild populations

Not in any category. In Canada, the Yellow-breasted Chat and its nest and eggs are protected under the *Migratory Birds Convention Act*.

10. Direct threats

ENDANGERED. For the Ontario population of the *virens* subspecies, the greatest threats are loss of suitable habitat from land conversion (i.e. intensive agriculture and urban expansion) and changes in habitat suitability as a result of natural succession to more mature forests. Much of the suitable habitat in the east is of anthropogenic origin, and requires human disturbance in order to be maintained. Widespread logging and fragmentation of forests during the 19th and 20th centuries probably led to initial increases in Yellow-breasted Chats and other bird species of early and mid successional habitats (Askins 1993). However, the more recent trend of rapid succession to forest on abandoned farmland, coupled with intensification of agriculture, have meant that shrub habitats have declined in the landscape (Askins 2000). For example, in the Lower Great Lakes Physiographic Region, more than 50% of habitat for Yellow-breasted Chats has been lost since 1966 (Dettmers and Rosenberg 2003). Southern Ontario is now largely composed of forests and open farmland; early successional shrub habitats are increasingly fragmented, occurring in smaller, isolated

patches with individual patches being of low habitat quality (Environment Canada 2010b).

In eastern North America, much of the habitat traditionally occupied by Yellow breasted Chats is dependent on disturbance, without which its habitat can rapidly succeed to closed forest. (Environment Canada 2010b). This appears to be occurring in Point Pelee National Park, where formerly suitable habitat has grown into more mature forest and the chat population has declined to the point where only one pair is thought to have nested in 2009 (Environment Canada 2011). Chats may be pre-adapted to colonize short-lived successional habitat by moving to new areas as habitat becomes available. Because the chat population in such decline, even if suitable habitat were available (through management), the remaining chat population could be below or approaching the threshold at which it can no longer locate or colonize these new habitats in Ontario.

Because chats are area-sensitive, many habitat patches may be so small and isolated that do not facilitate semi-colonial breeding by chats, a feature which may be necessary for population persistence. If population declines persist in the northeastern United States and southern Ontario, then local and regional numbers can be expected to fall below the threshold for population persistence. Habitat fragmentation also leaves chats vulnerable to Brown-headed Cowbird (*Molothrus ater*) parasitism (Environment Canada 2010b). The only Ontario data suggest a 25% parasitism rate (Peck and James 1987). However, cowbird abundance in eastern North America has been declining significantly in recent decades (Sauer et al. 2011), so the scope and severity of this threat is diminishing.

Because breeding chats are known to be present in so few localities in Ontario, all of which are subject to the above-mentioned direct threats, this bird qualifies as endangered under this criterion.

11. Specialized life history or habitat-use characteristics

SPECIAL CONCERN. Yellow-breasted Chat is restricted to early-successional shrubby habitat, and is classed as an open-canopy obligate; it also appears to be an area-sensitive species that is sensitive to patch size (Environment Canada 2011).

3.3 COSSARO evaluation results

1. Criteria satisfied in each status category

Endangered – [0/1]

Threatened – [3/0]

Special concern – [1/1]

List the number of Ontario-specific criteria met in each status category. These are primary criteria numbers 5, 6 and 7.

Endangered – [0]

Threatened – [2]

Special concern – [0]

2. Data Deficiency

No.

3. Status Based on COSSARO Evaluation Criteria

The application of COSSARO evaluation criteria suggests that **Yellow-breasted Chat** is **Threatened** in Ontario.

PART 4 Ontario status based on COSEWIC evaluation criteria

4.1 Application of COSEWIC criteria

Regional (Ontario) COSEWIC criteria assessment

Criterion A– Decline in total number of mature individuals

Threatened. Meets Threatened for A2bc because the 10-year decline in Ontario is estimated at >30%, the causes of which have neither ceased nor are reversible.

Criterion B– Small distribution range and decline or fluctuation

Threatened. Meets Threatened for B2ab (i,ii,iii,iv,v) because area of occupancy is <500 km², there are likely fewer than 10 locations, and there is a continuing projected decline in extent of occurrence, area of occupancy, area and extent of habitat, number of locations, and number of mature individuals.

Criterion C – Small and declining number of mature individuals

Endangered. Meets Endangered for C2a (i) because the population is <2500 mature individuals, and no population is >250 individuals.

Criterion D – Very small or restricted total population

Endangered. Meets Endangered for D1 because the population is <250 mature individuals.

Criterion E – Quantitative analysis

Insufficient information.

Rescue effect

No. Yellow-breasted Chat populations are declining significantly across most of its northeastern breeding range according to BBS, including all states bordering Ontario.

4.2 COSEWIC evaluation results

1. Criteria satisfied in each status category

Endangered – yes (2)

Threatened – yes (2)

Special Concern – no

2. Data Deficiency

No

3. Status Based on COSEWIC Evaluation Criteria

The application of COSEWIC evaluation criteria suggests that **Yellow-breasted Chat** is **Endangered** in Ontario.

PART 5 Ontario status determination

5.1 Application of COSSARO and COSEWIC criteria

COSSARO and COSEWIC criteria give the same result. **No**

The COSSARO criteria provide strong justification for uplisting Yellow-breasted Chat to Threatened in Ontario. The COSEWIC criteria provide similarly strong rationale for an Endangered designation. The reason for the discrepancy relates to the emphasis COSEWIC places on small population size as an extinction risk factor, which COSSARO does not take into account. This species is clearly declining in Ontario (particularly over the past 10 years), and its range is receding. There are estimated to be fewer than 10 localities where the species breeds in any one year. Its very low population size warrants a designation of Endangered for Yellow-breasted Chat in Ontario, as it is very close to being lost as a breeding species in the province. Declining populations in neighbouring jurisdictions eliminates the possibility of rescue.

5.2 Summary of status evaluation

Yellow-breasted Chat is classified as Endangered in Ontario.

The Yellow-breasted Chat (*Icteria virens*) is a shrub-thicket specialist that occurs at the northern edge of its range in Canada. One subspecies (*I. v. virens*) occurs only in southern Ontario and has a localized and very small population. Since the last status report in 2000, significant declines have occurred in the Ontario population, owing to habitat loss and fragmentation. A range retraction also appears to have occurred. Major threats include natural loss of habitat due to forest succession, human-mediated habitat loss due to agricultural intensification and urban expansion, habitat fragmentation and subsequent socially-facilitated population reduction, and Brown-headed Cowbird parasitism. The potential for rescue effect from neighbouring has also been dramatically reduced during this time, because population declines are evident across most of its eastern range. The Ontario population is clearly very small, declining, and at risk of extirpation. A designation of Endangered is appropriate for Yellow-breasted Chat in Ontario.

Information sources

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2. Community and Aboriginal Traditional Knowledge Sources

None received

3. Acknowledgements

Appendix 1: Northeastern North America status rank and decline

State/ province	Subnational rank ¹	1966-2009 annual trend (%, 95% CI) ²	43 year trend (%) ²	1999-2009 annual trend (%, 95% CI) ²	10 year trend (%) ²
CT	S1B	-19.7 (-43.2, -6.9)	-99%	-19.5 (-53.9, 15.9)	-88.6%
DE	S3B	-2.9 (-4.5, -1.5)	-71.8%	-3.2 (-6.8, -0.4)	-27.8%
IL	S5	-1.3 (-2.2, -0.3)	-43%	0.6 (-2.1, 3.3)	-5.8%
IN	S4B	-1.5 (-2.8, -0.5)	-47.8%	1.5 (-1.4, 4.7)	-14.0%
IA	S3B, S3N	2.5 (-4.6, 9.6)	-66.3%	0.6 (-18.0, 21.5)	-5.4%
LB	Not present	Not present	Not present	Not present	Not present
KY	S5B	-2.3 (-2.9, -1.6)	-63.2%	-0.3 (-2.0, 1.5)	-3.0%
MA	S1B, S1N	No information available	No information available	No information available	No information available
MB	Not present	Not present	Not present	Not present	Not present
MD	SB5	-2.4 (-3.0, -1.7)	-64.8%	-1.9 (-4.4, 0.6)	-17.5%
ME	Not present	Not present	Not present	Not present	Not present
MI	S3	-6.0 (-10.3, -1.9)	-93%	-6.2 (-17.7, 2.5)	-47.3%
MN	SNA	No information available	No information available	No information available	No information available
NB	Not present	Not present	Not present	Not present	Not present
NF	Not present	Not present	Not present	Not present	Not present
NH	Not present	Not present	Not present	Not present	Not present
NJ	S3B	-2.7 (-5.8, 0.6)	-69.2%	-0.9 (-6.2, 7.4)	-8.6%
NS	Not present	Not present	Not present	Not present	Not present
NY	S3	-9.9 (-14.7, -5.2)	-98.9%	-9.4 (-19.9, 4.3)	-62.7%
OH	S5	-2.7 (-3.5, -2.0)	-69.2%	-3.0 (-5.0, -1.2)	-26.3%
ON	S2B	-2.4 (-8.5, 3.6)	-64.8%	-2.3 (-13.9, 11.1)	-20.8%
PA	S5B	-5.1 (-6.0, -4.1)	-89.5%	-3.3 (-6.9, 0.5)	-28.5%
PE	Not present	Not present	Not present	Not present	Not present
QC	Not present	Not present	Not present	Not present	Not present

State/ province	Subnational rank ¹	1966-2009 annual trend (%, 95% CI) ²	43 year trend (%) ²	1999-2009 annual trend (%, 95% CI) ²	10 year trend (%) ²
RI	S1B	No information available	No information available	No information available	No information available
VA	S5	-1.6 (-2.3, - 0.9)	-50%	-1.1 (-3.0, 0.8)	-10.5%
VT	Not present	Not present	Not present	Not present	Not present
WI	S2B	-4.1 (-10.2, 2.3)	-83.5%	-4.1 (-15.2, 10.1)	-34.2%
WV	S4B	-5.8 (-6.6, - 5.0)	-92.3%	-6.2 (-9.0, - 3.3)	-47.3%

¹Source: NatureServe 2011

²Source: Sauer et al. 2011

Occurs as a native species in 19 of 29 northeastern jurisdictions

Strank or equivalent information available for 18 of 19 jurisdictions = (95%)

S1, S2, SH, or SX in 5 of 18 = (28%)